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(54) Title: HUMAN PROSTATE CANCER ASSOCIATED GENE SEQUENCES AND POLYPEPTIDES

(57) Abstract

This invention relates to newly identified prostate or prostate cancer related polynucleotides and the polypeptides encoded by these polynucleotides herein collectively known as "prostate cancer antigens", and to the complete gene sequences associated therewith and to the expression products thereof, as well as the use of such prostate cancer antigens for detection, prevention and treatment of disorders of the prostate, particularly the presence of prostate cancer. This invention relates to the prostate cancer antigens as well as vectors, host cells, antibodies directed to prostate cancer antigens and recombinant and synthetic methods for producing the same. Also provided are diagnostic methods for diagnosing and treating, preventing and/or prognosing disorders related to the prostate, including prostate cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of prostate cancer antigens of the invention. The present invention further relates to methods and/or compositions for inhibiting the production and/or function of the polypeptides of the present invention.

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What Is Claimed Is :

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of :
(a) a polynucleotide fragment of SEQ ID NO: X or a polynucleotide fragment of the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO: X ;
(b) a polynucleotide encoding a polypeptide fragment of SEQ ID NO: Y or a polypeptide fragment encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO: X ;
(c) a polynucleotide encoding a polypeptide fragment of a polypeptide encoded by SEQ ID NO: X or a polypeptide fragment encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO: X;
(d) a polynucleotide encoding a polypeptide domain of SEQ ID NO: Y or a polypeptide domain encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO: X;
(e) a polynucleotide encoding a polypeptide epitope of SEQ ID NO: Y or a polypeptide epitope encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO: X;
(f) a polynucleotide encoding a polypeptide of SEQ ID NO: Y or the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO: X, having biological activity;
(g) a polynucleotide which is a variant of SEQ ID NO: X;
(h) a polynucleotide which is an allelic variant of SEQ ID NO: X;
(i) a polynucleotide which encodes a species homologue of the SEQ ID NO:Y;
(j) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)- (i), wherein said polynucleotide does not hybridize under stringent conditions to a nucleic acid molecule having a nucleotide sequence of only A residues or of only T residues.

2. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding a protein.

3. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding the sequence identified as SEQ ID NO: Y or the polypeptide encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO: X.

4. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises the entire nucleotide sequence of SEQ ID NO: X or the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO: X.

5. The isolated nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

6. The isolated nucleic acid molecule of claim 3, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

7. A recombinant vector comprising the isolated nucleic acid molecule of claim 1.

8. A method of making a recombinant host cell comprising the isolated nucleic acid molecule of claim 1.

9. A recombinant host cell produced by the method of claim 8.

10. The recombinant host cell of claim 9 comprising vector sequences.
11. An isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of :
(a) a polypeptide fragment of SEQ ID NO: Y or of the sequence encoded by the cDNA included in the related cDNA clone;
(b) a polypeptide fragment of SEQ ID NO: Y or of the sequence encoded by the cDNA included in the related cDNA clone, having biological activity;
(c) a polypeptide domain of SEQ ID NO: Y or of the sequence encoded by the cDNA included in the related cDNA clone;
(d) a polypeptide epitope of SEQ ID NO: Y or of the sequence encoded by the cDNA included in the related cDNA clone;
(e) a full length protein of SEQ ID NO: Y or of the sequence encoded by the cDNA included in the related cDNA clone;
(f) a variant of SEQ ID NO: Y;
(g) an allelic variant of SEQ ID NO: Y; or
(h) a species homologue of the SEQ ID NO: Y.
12. The isolated polypeptide of claim 11, wherein the full length protein comprises sequential amino acid deletions from either the C-terminus or the Nterminus.
13. An isolated antibody that binds specifically to the isolated polypeptide of claim 11.
14. A recombinant host cell that expresses the isolated polypeptide of claim 11.
15. A method of making an isolated polypeptide comprising:
(a) cultures2 the recombinant host cell of claim 14 under conditions such that said polypeptide is expressed ; and
(b) recovering said polypeptide.
16. The polypeptide produced by claim 15.
17. A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polypeptide of claim 11 or the polynucleotide of claim 1.
18. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:
(a) determining the presence or absence of a mutation in the polynucleotide of claim 1 ; and
(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or absence of said mutation.
19. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:
(a) determining the presence or amount of expression of the polypeptide of claim 11 in a biological sample; and
(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or amount of expression of the polypeptide.
20. A method for identifying a binding partner to the polypeptide of claim 11 comprising:
(a) contacting the polypeptide of claim 11 with a binding partner; and
(b) determining whether the binding partner effects an activity of the polypeptide.
21. The gene corresponding to the cDNA sequence of SEQ ID NO: Y.
22. A method of identifying an activity in a biological assay, wherein the methodcomprises:
(a) expressing SEQ ID NO: X in a cell;
(b) isolating the supernatant ;
(c) detecting an activity in a biological assay; and
(d) identifying the protein in the supernatant having the activity.
23. The product produced by the method of claim 20.